Effect of hot weather on strength of reinforced concrete beams

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Abstract: Many development projects being executed in hot-climate countries involve construction of reinforced concrete structures in hot weather. Three basic concepts for which these structures are designed are moment, shear, and bond/development length. This paper presents results of tests conducted on 52 reinforced concrete beams of various dimensions containing reinforcing bars of various sizes and yield strengths. The beams were prepared and cured in hot-weather environments at various concrete mix temperatures. The results of the tests show that, even if proper precautions are taken to obtain the required compressive strength of the concrete, the strength of the reinforced concrete beams prepared and cured in hot weather could be reduced by as much as 25% when the concrete mix temperature reaches 45°C (126.00°F).